Chlorine Safety

Occupational Safety & Health Bureau

Montana Department of Labor & Industry

Prepared for Montana Employers
by the

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CHLORINE SAFETY

Chlorine need not be a serious hazard if the people working with it are properly trained in its handling. The following are some guidelines for assuring the safe handling of chlorine.

1. Provide proper instruction and supervision to workers charged with responsibility of the chlorine equipment.

2. Provide proper and approved self-contained breathing apparatus in areas where chlorine is stored or used.

3. Prepare escape plans from areas where there might be a chlorine emission. Remember to move uphill and upwind.

4 . Never store combustible or flammable materials near chlorine containers.

5 . Never apply heat directly to a chlorine container.

6. Never attempt to weld an "empty" chlorine pipe line without purging it with air first.

7. Install safety showers and eye wash stations near the chlorine equipment.

8. Obtain the proper emergency kit for the containers at your installation.

9. If there is a leak, at least two persons should make the repairs.

10. Keep all breathing apparatus stored outside the chlorine area.

11. Spraying water on leaking containers will make the leak worse.

12. When entering an equipment area, take shallow breaths until you are sure that there is not a chlorine gas leak.

13. It is best to rely upon the chlorination equipment for direct disposal of chlorine gas.

14. Chlorine container should be secured by chains, chocks, or trunnions.

SAFETY RULES FOR CHLORINE CYLINDERS AND CONTAINERS

100 AND 150 POUND CYLINDERS

1. Never expose a cylinder to heat.
2. Never tamper with a fusible plug.
3. Always keep the hood in place, except when the cylinder is being used.
4. Never lift a cylinder by its hood.
5. Do not connect two or more cylinders discharging liquid to a common manifold.
6. Never drop or knock over a cylinder.

TON CONTAINERS

1. Never expose a container to excessive heat.
2. Never tamper with a fusible plug.
3. Do not move fill ton containers with equipment rated under two ton capacity.
4. Do not connect liquid valves of two or more containers to a common manifold.
5. Store containers in separately marked areas protected from heat sources.
6. 6. Do not use or store containers near air intakes or basements where fumes could spread to other areas.

CHLORINE DATA SHEET

DESCMIPTION

Gas is greenish-yellow, non-flammable, and about 2.5 times heavier than air.

HAZARDS

Toxic, irritating to skin, eyes, nose, and mucous membranes. Liquid causes severe irritation and blistering of skin.

HEALTH PRECAUTIONS

Use only in well ventilated areas - Eyewashes, showers, and oxygen should be available. Self- contained breathing apparatus or canister type respirators should also be accessible.

PERSONAL PROTECTIVE CLOTHNG

Should include:

(1) Full face shield or non-ventilated chemical goggles.
(2) Chemically resistant rubber gloves.
(3) Apron or jacket.
(4) Long sleeves and trousers.
(5) Open shoes and sneakers should be prohibited.

HEALTH EFFECT

Low concentrations: burning in the eyes, nose, and throat; redness in the face, sneezing, and coughing
High concentrations: tightness in throat and chest - pulmonary edema. 1000 PPM is rapidly fatal.

FIRST AID

INHALATION

(1) Remove victim from contaminated area.
(2) Keep victim warm in a reclined position with head and shoulders elevated.
(3) Give artificial respiration, if necessary.
(4) Administer oxygen as soon as possible.
(5) Call a physician immediately.

SKIN CONTACT

(1) Shower victim, removing all contaminated clothing.
(2) Wash affected area with soap and water.

EYE CONTACT

(1) Irrigate eyes with water for 15 minutes, holding eyelids wide apart.
(2) Call a physician immediately.
(3) Irrigate for second 15-minute period if physician is not immediately avaiable.

HANG NEAR CHLORINATOR, SULFONATOR OR AMMONIATOR

CHANGING CYLINDERS

1. Turn valve stem clockwise to close cylinders valve.

2. Allow float in flow meter to drop to zero. Indicator on front of gas feeder should indicate no gas.

3. Wait approximately one minute, float should remain at zero. If float flutters or does not drop to zero, valve may not be closed tightly. Make certain valve is closed before proceeding.

4. Turn off ejector and make certain the gas supply indicator stays in the "No Gas" position by turning the "Reset" knob. If the indicator resets, either gas pressure is still present or there is an air leak in the system. Refer to instruction manual if an air leak is evident.

5. Loosen gas feeder yoke screw. Remove gas feeder from valve.

6. Replace gas cylinder

7. Remove old lead gasket. Inspect and clean mating surfaces of gas feeder and valve. Install new unused lead gasket.

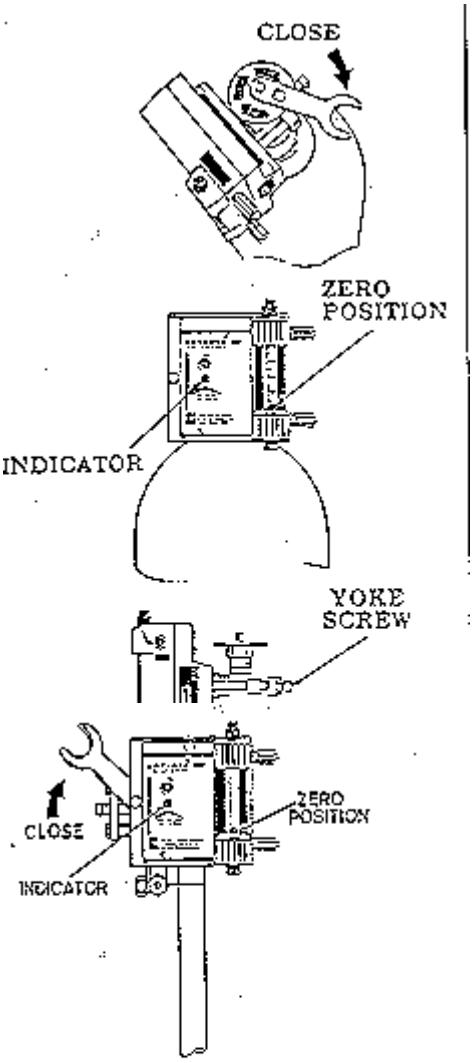
8. Position gas feeder on new gas cylinder and tighten yoke screw. Do not tighten excessively.

9. Crack open gas cylinder valve and reclose quickly. Check for leaks. If leaks exist turn on ejector and repeat steps number (2),(3), and (4) and correct leaks.

Leak test solutions: Chlorinator/Sulfonator-Ammonia: Ammoniator-Bleach.

10. Open gas cylinder valve approximately ¼ turn only and leave cylinder wrench on valve.

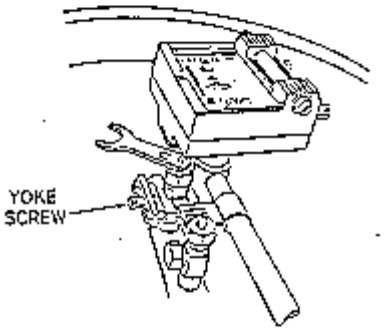
11. Turn on ejector.



<u>NOTES:</u>

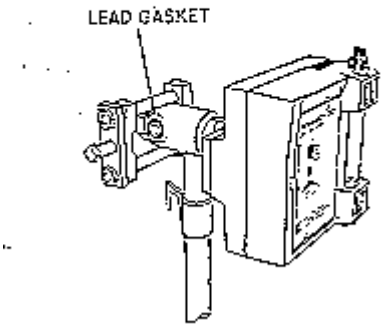
A. REFER TO GAS FEEDER INSTRUCTION BULLETIN FOR MORE GASKET DETAILED INSTRUCTIONS.

B. CONTACT YOUR GAS SUPPLIER IF THE CYLINDER VALVE OR CYLINDER IS CONSIDERED TO BE DEFECTIVE.



HANG NEAR CHLORINATOR OR SULFONATOR

CHANGING TON CONTAINERS



1. Turn valve stem clockwise to close ton container valve.

2. Allow float in flow meter to drop to zero. Indicator on front of gas feeder should show red indicating no gas. All liquid must be vaporized from the trap.

3. Wait approximately one minute. Float should float should remain at zero. If float flutters or does not drop to zero, valve may not be closed tightly. Make certain valve is closed before proceeding.

4. Turn off ejector and make certain the gas supply indicator stays in the "No Gas" position by turning the "Reset" knob. If the indicator resets, either gas pressure is still present or there is an air leak in the system. Refer to instruction manual if an air leak is evident.

5. Loosen gas feeder yoke screw. Remove gas feeder from valve.

6. Replace ton container, make sure the full container is oriented with the valves in the vertical position, one valve above the other.

7. Remove old lead gasket. Inspect and clean mating surfaces of gas feeder and valve. Install new unused lead gasket.

8. Position gas feeder on new gas cylinder and tighten yoke screw. Do not tighten excessively.

9. Be sure heater is plugged in and operating. An operating heater provides the heat of vaporization to any trapped liquid.

10. Crack open gas cylinder valve and reclose quickly. Check for leaks. If leaks exist turn on ejector and repeat steps number (2),(3), and (4) and correct leaks.

11. Open ton container valve slowly approximately ¼ turn only and leave cylinder wrench on valve.

12. Turn on ejector.

Notes:

A. REFER TO GAS FEEDER INSTRUCTION BULLETIN FOR MORE GASKET DETAILED INSTRUCTIONS.

B. CONTACT YOUR GAS SUPPLIER IF THE CYLINDER VALVE OR CYLINDER IS CONSIDERED TO BE DEFECTIVE.